LINQ Interview Questions And Answers Guide.

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Question # 1
What is LINQ?
Answer:-
It stands for Language Integrated Query. LINQ is a collection of standard query operators that provides the query facilities into .NET framework language like C#, VB.NET.
Read More Answers.

Question # 2
Why can not datareader by returned from a Web Services Method?
Answer:-
Because, it is not serializable
Read More Answers.

Question # 3
What is the extension of the file, when LINQ to SQL is used?
Answer:-
The extension of the file is .dbml
Read More Answers.

Question # 4
How LINQ is beneficial than Stored Procedures?
Answer:-
There are couple of advantage of LINQ over stored procedures.
1. Debugging - It is really very hard to debug the Stored procedure but as LINQ is part of .NET, you can use visual studio's debugger to debug the queries.
2. Deployment - With stored procedures, we need to provide an additional script for stored procedures but with LINQ everything gets compiled into single DLL hence deployment becomes easy.
3. Type Safety - LINQ is type safe, so queries errors are type checked at compile time. It is really good to encounter an error when compiling rather than runtime exception!
Read More Answers.

Question # 5
What is a Lambda expression?
Answer:-
A Lambda expression is nothing but an Anonymous Function, can contain expressions and statements. Lambda expressions can be used mostly to create delegates or expression tree types. Lambda expression uses lambda operator => and read as 'goes to' operator.
Left side of this operator specifies the input parameters and contains the expression or statement block at the right side.
Example: myExp = myExp/10;
Now, let see how we can assign the above to a delegate and create an expression tree:
delegate int myDel(int intMyNum);
static void Main(string[] args)
{
    //assign lambda expression to a delegate:
    myDel myDelegate = myExp => myExp / 10;
    int intRes = myDelegate(110);
    Console.WriteLine("Output {0}", intRes);
    Console.ReadLine();
    //Create an expression tree type
    //This needs System.Linq.Expressions
    Expression<myDel> myExpDel = myExp => myExp /10;
No te:
The => operator has the same precedence as assignment (=) and is right-associative.
Lambdas are used in method-based LINQ queries as arguments to standard query operator methods such as Where.

Question # 6
What is the LINQ file extension that interacts with Code Behind objects.

Answer:-
it's .dbml

Question # 7
Why Select clause comes after from clause in LINQ?

Answer:-
The reason is, LINQ is used with C# or other programming languages, which requires all the variables to be declared first. From clause of LINQ query just defines the range or conditions to select records. So that's why from clause must appear before Select in LINQ.

Question # 8
Difference between LINQ and Stored Procedures?

Answer:-
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2. Deployment - With stored procedures, we need to provide an additional script for stored procedures but with LINQ everything gets compiled into single DLL hence deployment becomes easy.
3. Type Safety - LINQ is type safe, so queries errors are type checked at compile time. It is really good to encounter an error when compiling rather than runtime exception!
4. PreCompiled - Stored Procedures are precompiled, and LINQ queries need to compile before execution. So stored procedures are fast in performance.

Question # 9
What are Benefits and Advantages of LINQ?

Answer:-
Benefits and Advantages of LINQ are:
1. Makes it easier to transform data into objects.
2. A common syntax for all data.
3. Strongly typed code.
4. Provider integration.
5. Reduction in work.
6. Performance in the general case doesn't become an issue.
8. LINQ is declarative.

Question # 10
What are the three main components of LINQ or Language INtegrated Query?

Answer:-
1. Standard Query Operators
2. Language Extensions
3. LINQ Providers

Question # 11
How are Standard Query Operators implemented in LINQ?

Answer:-
Standard Query Operators are implemented as extension methods in .NET Framework. These Standard Query Operators can be used to work with any collection of objects that implements the IEnumarable interface. A class that inherits from the IEnumarable<> interface must provide an enumerator for iterating over a collection of a specific type. All arrays implement IEnumarable<> Also, most of the generic collection classes implement IEnumarable<> interface.

Question # 12
How are Standard Query Operators useful in LINQ?

Answer:-
Standard Query Operators in LINQ can be used for working with collections for any of the following and more.
2. Order the results of a collection.
3. Grouping.
5. Joining two collections based on matching keys.
6. Filter the results

Question # 13
List the important language extensions made in C# to make LINQ a reality?

Answer:-
1. Implicitly Typed Variables
2. Anonymous Types
3. Object Initializers
4. Lambda Expressions

Question # 14
What is the purpose of LINQ Providers in LINQ?

Answer: -
LINQ Providers are a set of classes that takes a LINQ query and dynamically generates a method that executes an equivalent query against a specific data source.

Question # 15
What are the four LINQ Providers that .NET Framework ships?

Answer: -
1. LINQ to Objects - Executes a LINQ query against a collection of objects
2. LINQ to XML - Executes an XPath query against XML documents
3. LINQ to SQL - Executes LINQ queries against Microsoft SQL Server.
4. LINQ to DataSets - Executes LINQ queries against ADO.NET DataSets.

Question # 16
Write a program using LINQ to find the sum of first 5 prime numbers?

Answer: -
class Program
{
    static void Main()
    {
        int[] MyPrimeNumbers = {1,2,3,5,7};
        // Use the Count() and Sum() Standard Query Operators to
        // compute the count and total sum respectively
        Console.WriteLine("The sum of first {0} prime number is {1}",
            MyPrimeNumbers.Count(), MyPrimeNumbers.Sum());
    }
}

Question # 17
What is Difference between XElement and XDocument?

Answer: -
Both are the classes defined by System.Xml.Linq namespace
XElement class represents an XML fragment
XDocument class represents an entire XML document with all associated meta-data.
example:
XDocument d = new XDocument(  
    new XComment("hello"),
    new XElement("book",  
        new XElement("boobname","ASP.NET"),
        new XElement("authorname","techmedia"),
    )
);
Question # 19
What is the benefit of using LINQ on Dataset?

**Answer:**
The main aim of using LINQ to Dataset is to run strongly typed queries on Dataset. Suppose we want to combine the results from two Datasets, or we want to take a distinct value from the Dataset, then it is advisable to use LINQ. Normally, you can use the SQL queries to run on the database to populate the Dataset, but you are not able to use SQL query on a Dataset to retrieve a particular values. To get this you need to use ADO.NET functionalities. But, in case of LINQ, it provides more dignified way of querying the Dataset and provides some new features as compared to ADO.NET.

Question # 20
Which class extension methods are used in LINQ to SQL?

**Answer:**
1. System.Linq.Enumerable
2. System.Linq.Queryable
3. None of these

Question # 21
Which assembly represents the core LINQ API?

**Answer:**
System.Query.dll assembly represents the core LINQ API.

Question # 22
What is the use of System.Data.DLinq.dll?

**Answer:**
System.Data.DLinq.dll provides functionality to work with LINQ to SQL.

Question # 23
What is the use of System.XML.XLinq.dll?

**Answer:**
System.XML.XLinq.dll contains classes to provide functionality to use LINQ with XML.

Question # 24
Why can't DataReader be returned from a Web Services Method?

**Answer:**
Because DataReader is not serializable.

Question # 25
What is the LINQ file extension that interacts with Code Behind objects?

**Answer:**
The extension of the file is .dbml

Question # 26
What is Linq to SQL Deferred Loading?

**Answer:**
(C#) - Deferred Loading is a property of Linq to sql, by default it is set true.
Example - Let's have two tables - Blogs Table (BlogID, Blog Name, owner) and Post table ( PostID, BlogID, Title, Body)
To find Name and No's of posts in each blog:
BlogDataContext ctx = new BlogDataContext();
var query = from b in ctx.Blogs select b;
foreach (Blog b in query)
{
    Console.WriteLine("{0} has {1} posts", b.BlogName, b.Posts.Count);
}

Output of queries Produce Blog name with no's of post, But For each Blog Looping will be occurs (in case long list of blogs) that's reduces Overall Performance that's called the Deferred loading.

Read More Answers.

**Question # 27**
Write a Program using Skip and Take operators. How can it beneficial for bulky data accessing on page?

**Answer:-**
"skip" and "take" Operator used for Paging. Suppose we have Customer table of 100 records. To find 10 records by skipping the first 50 records from customer table-

```csharp
public void Pagingdatasource()
{
    var Query = from CusDetails in db.customer skip (50) Take (10)
    ObjectDumper.Write(q)
}
```

Hence The LinQ " SKIP" operator lets you skip the results you want, and "Take" Operator enables you yo select the rest of result . So By Using Skip and Take Operator, You can create paging of Specific sequence.

Read More Answers.

**Question # 28**
Write a Program for Concat to create one sequence of Data Rows that contains DataTables Data Rows, one after the other?

**Answer:-**
(C#)
```csharp
public void Datasetlinq()
{
    var numbersA = TestDS.Tables("NumbersA").AsEnumerable();
    var numbersB = TestDS.Tables("NumbersB").AsEnumerable();
    var allNumbers = numbersA.Concat(numbersB);
    Console.WriteLine("All numbers from both arrays:");
    foreach (object n_loopVariable in allNumbers)
    {
        n = n_loopVariable;
        Console.WriteLine(n["number"]);
    }
}
```

Read More Answers.

**Question # 29**
How can you find average of student marks from student tables (Columns are StudentID, Marks)?

**Answer:-**
(C#)
```csharp
public void LinqToSqlAverage()
{
    var query = (from p in db.student.Marks).Average();
    Console.WriteLine(q);
}
```

Read More Answers.

**Question # 30**
What is "OfType" in linq?

**Answer:-**
```csharp
public void TypeofExa()
{
    var numbers = {null,1.0,"two", 3,"four",5,"six",7.0 };
    var doubles = from n in numbers where n is doublen;
    Console.WriteLine("Numbers stored as doubles:");
    foreach (object d in doubles)
    {
        Console.WriteLine(d);
    }
}
```

Output:
Numbers stored as doubles:
1
7
Question # 31
How can we find Sequence of Items in two different array (same Type) in the same order using linq query?

Answer:-

```csharp
public void MatchSequenceLinq()
{
    var wordsA = new string[] { "Rahul", "ashok", "sweta" };
    var wordsB = new string[] { "rahul", "ashok", "sweta" };
    var match = wordsA.SequenceEqual(wordsB);
    Console.WriteLine("The sequences match: {0}", match);
}
```

Question # 32
Differentiate between Conversion Operator “IEnumerable” and “ToDictionary” of LINQ?

Answer:-

IEnumerable and ToDictionary both are Conversion Operator which are used to solved to conversion type Problems. "IEnumerable" operator simply returns the source sequence as an object of type IEnumerable. This kind of "conversion on the fly" makes it possible to call the general-purpose extension methods over source, even if its type has specific implementations of them.

Signature:

```csharp
public static IEnumerable<T> AsEnumerable<T>(
    this IEnumerable<T> source
);
```

"ToDictionary" Conversion Operator is the instance of Dictionary (k, T). The "keySelector" predicate identifies the key of each item while "elementSelector", if provided, is used to extract each single item.

Key and elementSelector Predicate can be Used in following ways:

Example-

```csharp
public void ToDictionaryExample()
{
    var scoreRecords = new Dictionary<string, int>
    {
        { "Alice", 50 },
        { "Bob", 40 },
        { "Cathy", 45 }
    };
    var scoreRecordsDict = scoreRecords.ToDictionary(sr => sr.Name);
    Console.WriteLine("Bob's score: {0}", scoreRecordsDict["Bob"]);
}
```

Question # 33
List out the Data Context Functions. Where do we use “SubmitChanges()”?

Answer:-

Create Database ()
Delete database ()
Database Exist ()
Submit Changes ()
Create Query ()
Log ()
SubmitChanges() - SunbmitChanges Data Context Fuction Used to submit any update to the actual database.

Question # 34
Why do we use "Contains" method for strings type functions?

Answer:-

Contains method Used to find all matching records From Given string using Matching keywords.

Example-

```csharp
public void LinqToSqlStringUsingContains()
{
    var q = From c In db.Customers
    Where c.ContactName.Contains("Anders")
    Select c;
    ObjectDumper.Write(q);
}
```

Question # 35
What is Quantifiers in reference linq to Dataset?

**Answer:**
Quantifier Operators return the Boolean value (either True or false) if some or all the elements in a sequence satisfy a condition. Mainly two Quantifiers in linq:

- **Any**
- **All**

Examples (vb)

"Any" to determine if any of the words in the array contain the substring

```vbnet
Public Sub ExampleAny()
    Dim words() = {"believe", "relief", "receipt", "field"}
    Dim iAfterE = words.Any(Function(w) w.Contains("ei"))
    Console.WriteLine("There is a word that contains in the list that contains 'ei': {0}", iAfterE)
End Sub
```

Result:

```
There is a word that contains in the list that contains 'ei': True
```

"All" to return a grouped a list of products only for categories that have all of their products in stock

```vbnet
Public Sub Quantifier_All_Exam()
    Dim products = GetProductList()
    Dim productGroups = From p In products 
                         Group p By p.Category Into Group 
                         Where (Group.All(Function(p) p.UnitsInStock > 0)) 
                         Select Category, ProductGroup = Group
    ObjectDumper.Write(productGroups, 1)
End Sub
```

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